BEET (*Beta vulgaris*)
WILD BEET (*Beta vulgaris* ssp. *maritima*)
Beet curly top; beet curly top virus

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Evaluation of *Beta* PIs from the USDA-ARS NPGS for resistance to *Beet curly top virus*, 2002.

Thirty Plant Introductions (PIs) from the USDA-ARS National Plant Germplasm System (NPGS) (Garden Beet, Sugar Beet, Leaf Beet, Fodder Beet, and wild beet) were evaluated for resistance to the *Beet curly top virus* in an artificially inoculated nursery, managed by the Beet Sugar Development Foundation (BSDF) in Kimberly, ID. The field was planted on 11 through 12 Jun. Planting was late to maximize the number of viruliferous leafhoppers available to transfer to the sugarbeets while they are in the 8- to 10-leaf stage. Plots were 12 ft long, two-rows with 22 in between rows and replicated twice. After the beets emerged, plots were trimmed to 8 ft long, thinned to one foot between beets, and cultivated. Viruliferous leafhoppers were released on 15 and 16 Jul to cause an artificial epiphytotic. One week before the leafhoppers were released in the nursery, they had been transferred onto curly top-infested beets to assure that they were viruliferous when placed in the field. Uniform infection was achieved by placing leaf hoppers uniformly throughout the field at a rate of approximately 1 leafhopper per plant, and then spreading the leafhoppers daily for the next week by dragging a 12-foot tarp across the field. Plants were sprayed on 23 Aug to kill the leafhoppers.

Plots were visually evaluated and rated on a Disease Index (DI) scale of 0 to 9 (no symptoms to dead) on 27 Aug and 10 Sep. An analysis of variance (PROC GLM - SAS) on the disease indices (visual evaluation scores) determined that there were highly significant differences ($P \leq 0.01$) among entries on both dates. An LSD was calculated using two as the number of replications. Leafhopper release was late, and the summer was hot and dry, and the epiphytotic was moderate, thus ratings were recorded later than last year (27 Aug, 2002 for first reading as opposed to 17 Aug, 2001). There were 25 accessions which were not significantly different from the resistant control at the first rating period, of which 22 were not significantly different at the second rating as well. Two additional accession was not significantly different from the resistant control only at the second rating.

			Disease Index*	
Entry	Identification	Donor's ID	27 Aug	10 Sep
1	PI 504181	wild leaf beet	2.3	4.0
2	PI 504269	IDBBNR 5750 - wild beet	2.8	3.3
3	PI 504277	IDBBNR 5758 - wild beet	2.8	4.0
4	PI 504279	IDBBNR 5760 - wild beet	2.5	3.5
5	PI 518168	IDBBNR 9600 - wild beet	3.0	3.3
6	PI 518404	IDBBNR 5898 - wild beet	3.0	2.8
7	PI 518644	IDBBNR 9604 - FC 609	3.3	3.5
8	PI 518645	IDBBNR 9605 - FC 609 CMS	2.5	3.5
9	PI 535830	POLY PAST	3.5	3.5
10	PI 535831	IDBBNR 9636 - Tytan Poly	3.0	3.0
11	PI 182145	IDBBNR 5366 - fodder beet	4.3	5.3
12	PI 540557	WB 820 - wild beet	2.3	4.3
13	PI 540615	WB 869 - wild beet	2.5	2.8
14	PI 540652	WB 906 - wild beet.	2.0	2.8
15	PI 540660	WB 914 - wild beet	2.3	2.5
16	PI 540661	WB 915 - wild beet	1.8	2.8
17	PI 540662	WB 916 - wild beet	2.8	3.0
18	PI 540664	WB 918 - wild beet	2.0	2.5
19	PI 540665	WB 919 - wild beet	2.8	2.8
20	PI 540667	WB 921 - wild beet	2.5	3.3
21	PI 546504	IDBBNR 9671 - Turkestanskaja	2.0	3.0
22	PI 546522	IDBBNR 9689 - wild beet	2.8	3.5
23	PI 590695	F1001 - IDBBNR 4360	2.8	3.3
24	PI 611060	IDBBNR 9544 - Swiss chard	4.5	5.8
25	PI 614823	IDBBNR 9507	3.8	4.5
26	PI 614824	IDBBNR 9562 - Jaltuskovskaja 116	2.5	3.5
27	PI 614825	AT3984A - IDBBNR 4457	2.5	2.5
28	PI 614827	AT3993-4 - IDBBNR 4463	3.0	2.8
29	PI 614828	IDBBNR 5004 - AT3994-4	2.8	2.8
30	PI 614829	IDBBNR 5023 - 552	3.0	2.5
31	96A008	Beta G6040 - Resistant Check	2.3	2.3
32	911032	FC718 - Susceptible Check	4 .0	4.3
		$LSD_{(0.05)}$**	0.92	1.34

*****Disease Index (DI) scale = 0 (no symptoms) to 9 (plant death).